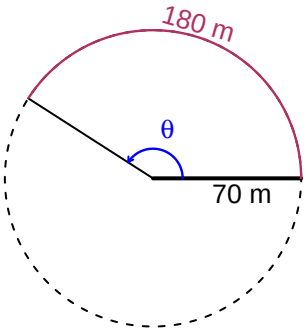
Name: Date:

Trig Final (TEST v664)

- You can use a calculator (like Desmos)
- You should have a unit-circle with special angles and coordinates marked.

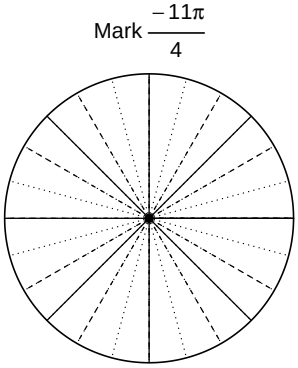
Question 1

In the figure below, we see a circle and a central angle that subtends an arc. The radius is 70 meters. The arc length is 180 meters. What is the angle measure in radians?

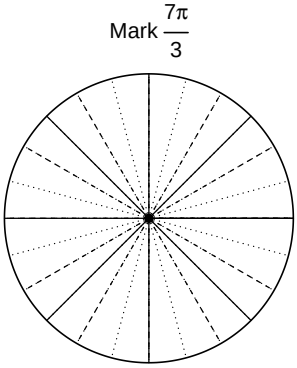


Question 2

Consider angles $\frac{-11\pi}{4}$ and $\frac{7\pi}{3}$. For each angle, use a spiral with an arrow head to **mark** the angle on a circle below in standard position. Then, find **exact** expressions for $\cos\left(\frac{-11\pi}{4}\right)$ and $\sin\left(\frac{7\pi}{3}\right)$ by using a unit circle (provided separately).



Find $\cos(-11\pi/4)$



Find $\sin(7\pi/3)$

Question 3

If $\sin(\theta) = \frac{-56}{65}$, and θ is in quadrant IV, determine an exact value for $\tan(\theta)$.

Question 4

A mass-spring system oscillates vertically with a midline at $y = -4.86$ meters, an amplitude of 8.21 meters, and a frequency of 6.57 Hz. At $t = 0$, the mass is at the midline and moving down. Write an equation to model the height (y in meters) as a function of time (t in seconds).